

**REMARKS**

In the Office Action identified above, the Examiner:

- a) rejected claims 1, 4-8, 14, and 16 under 35 U.S.C. § 102(b) as being anticipated by Kurland et al. (U.S. Patent No. 4,318,970, "Kurland");
- b) rejected claims 1, 3-8, 14, 16, 18, and 19 under 35 U.S.C. § 102(b) as being anticipated by Wreede et al. (U.S. Patent No. 4,329,409, "Wreede '409");
- c) rejected claims 1-5, 8-10 13-17, 19, and 20 under 35 U.S.C. § 102(b) as being anticipated by Wreede et al. (U.S. Patent No. 4,789,211, "Wreede '211");
- d) rejected claims 1-17, 19, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Wreede '211 in view of Wreede '409 or Kurland;
- e) rejected claims 1-5, 8-10, and 13-20 under 35 U.S.C. § 103(a) as being unpatentable over Horigoma et al. (JP 2002-123949, "Horigoma") in view of Wreede '211;
- f) rejected claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Horigoma in view of Wreede '211 combined with Wreede '409 or Kurland; and
- g) rejected claims 1-20 on the grounds of nonstatutory obvious-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 7,031,037 ("Hirao") in view of Wreede '211 combined with Wreede '409 or Kurland.

By this amendment, Applicants have amended claims 1, 15, and 16 to more appropriately define their invention, and have canceled claims 8 and 13 without prejudice or disclaimer of the subject matter thereof. As a result, claims 1-7, 9-12, and 14-20 are pending and are presented for examination.

Applicants have amended claim 1 to recite:

“the plastic substrate includes a material selected from a group consisting of polycarbonate resins, norbornene resins, cycloolefin resins, polyallylate, polymethyl methacrylate, polystyrene, poly (ethylene dimethylacrylate), polydiethylene glycol bis (allyl carbonate), polyphenylene oxide, polyethylene terephthalate,

the first inorganic intermediate layer includes a material selected from a group consisting of magnesium fluoride, calcium fluoride, zirconium fluoride, palladium fluoride, barium fluoride, cesium bromide, cesium iodide, magnesium oxide, aluminum oxide, silicon oxide, titanium oxide, chromium oxide, zinc oxide, yttrium oxide, zirconium oxide, indium oxide, tin oxide, tellurium oxide, cerium oxide, hafnium oxide, tantalum oxide, boron nitride, silicon nitride, aluminum nitride, zirconium nitride, silicon carbide, zinc sulfide, barium titanate, and diamond, and

the organic recording layer includes photopolymers which are compositions which include photoinitiators.”

In addition, independent claims 15 and 16 have been similarly amended. Support for these amendments may be found in the specification at, for example, page 7, lines 20-34, and page 8, lines 27-33, and canceled claim 8.

Applicants respectfully traverse the Examiner’s rejection of claims 1, 4-8, 14, and 16 under 35 U.S.C. § 102(b) as being anticipated by Kurland, the rejection of claims 1,

3-8, 14, 16, 18, and 19 under 35 U.S.C. § 102(b) as being anticipated by Wreede '409, and the rejection of claims 1-5, 8-10 13-17, 19, and 20 under 35 U.S.C. § 102(b) as being anticipated by Wreede '211.

The rejections of claims 8 and 13 have been rendered moot by their cancellation.

In order to properly establish that each reference anticipates Applicants' claimed invention under 35 U.S.C. § 102, each and every element of each of the claims in issue must be found, either expressly described or under principles of inherency, in that single reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." See M.P.E.P. § 2131, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Each of Kurland, Wreede '409, and Wreede '211 does not anticipate Applicants' independent claim 1, because each reference fails to disclose each and every element of independent claim 1. In particular, Kurland, Wreede '409, and Wreede '211 fail to disclose, among other things, at least the claimed "first inorganic intermediate layer formed on the first surface of the plastic substrate" of claim 1.

As disclosed in Applicants' specification, the **first inorganic intermediate layer** of claim 1 obstructs the **diffusion of the low molecular weight compound** between the organic recording layer and the plastic substrate, and recording of a ghost **during recording of a hologram** is thus suppressed. See Applicants' specification at page 6, line 36 to page 7, line 17.

Kurland discloses a pre-holographic element, as shown in Fig. 1, including a hydrophobic substrate 10, a moisture barrier layer 11, and a hydrophilic photosensitive material 12. A hologram is formed by exposing the photosensitive layer 12 to an actinic

interference pattern to record a latent image thereon and developing the photosensitive layer 12. Kurland, col. 1, lines 64-67 and col. 4, lines 22-32. However, the moisture barrier layer 11 is applied in order to provide sufficient adhesion of the photosensitive material 12 and to provide a barrier against **diffusion of water vapor** over the **lifetime of the device**. Kurland, col. 3, lines 25-36. Thus, the moisture barrier layer 11 of Kurland **does not** constitute the claimed "first inorganic intermediate layer" of claim 1.

Wreede '409 also discloses a pre-holographic element similar to the structure of Kurland, including a hydrophobic substrate 10, a moisture barrier layer 11, and a hydrophilic photosensitive material 12. Wreede '409, Fig. 1. The hydrophilic photosensitive material 12 includes materials such as dichromated gelatin, photographic silver halide emulsion, diazo gelatin and other gelatin-based photosensitive materials. Wreede '409, col. 4, lines 61-65. However, Wreede '409 also discloses that the moisture barrier layer 11 is applied in order to provide sufficient adhesion of the photosensitive material 12 and to provide a barrier against **diffusion of water vapor** over the **lifetime of the device**. Wreede '409, col. 3, lines 53-68. The moisture barrier layer 11 of Wreede '409 thus **cannot** constitute the claimed "first inorganic intermediate layer" of claim 1.

Wreede '211 discloses a hologram stabilizing assembly in Fig. 2, including inner and outer hydrophobic substrate layers 12 and 14, a moisture barrier 15, a transparent water absorbent substrate layer 16, and an emulsion layer 18 which apparently comprises emulsions which utilize hydrophilic organic colloids as an emulsion vehicle, including photopolymers. Wreede '211, col. 2, lines 14-67. Wreede '211, however, discloses that the moisture barrier layer 15 enhances the moisture transfer resistance

and thus **enhances the life of the completed holographic assembly**. Wreede '211, col. 2, lines 31-38. Therefore, the moisture barrier layer 11 of Wreede '211 **cannot** constitute the claimed "first inorganic intermediate layer" of claim 1.

For at least the reason that each of the cited references fails to disclose each and every element of amended claim 1, claim 1 is allowable over the references, and claims 2-7, 9, 10, and 14 are allowable at least due to their dependence from claim 1. Amended claims 15 and 16, while of different scope, recite features similar to those recited in amended claim 1. Amended claims 15 and 16 are therefore allowable over the cited references at least for reasons disclosed above in regard to claim 1, and claims 17-20 are allowable at least due to their dependence from claim 16. Thus, the rejections of claims 1-7, 9, 10, and 14-20 under 35 U.S.C. § 102 should be withdrawn.

Applicants respectfully traverse the Examiner's rejection of claims 1-17, 19, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Wreede '211 in view of Wreede '409 or Kurland; the rejection of claims 1-5, 8-10, and 13-20 under 35 U.S.C. § 103(a) as being unpatentable over Horigome et al. (JP 2002-123949, "Horigome") in view of Wreede '211; and the rejection of claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Horigome in view of Wreede '211 combined with Wreede '409 or Kurland. A *prima facie* case of obviousness has not been established.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success

must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). M.P.E.P. § 2142, 8th Ed., Rev. 5 (August 2006), p. 2100-125.

A *prima facie* case of obviousness has not been established because, among other things, the cited references fail to teach or suggest each and every element of independent claims 1, 15, and 16.

Horigome fails to teach or suggest at least the claimed "first inorganic intermediate layer" of claim 1, for example. Horigome is silent regarding any inorganic intermediate layer which obstructs the diffusion of the low molecular weight compound between the organic recording layer and the plastic substrate, and thus cannot teach or suggest the claimed first inorganic intermediate layer. Indeed, the Examiner does not rely upon the disclosure of Horigome to teach this element, but contends modifying it by "adding moisture barrier layers, such as taught by Wreede et al. '211 to prevent moisture damage and shifting of the replay." See Office Action at page 4.

However, as noted above, Wreede '211, Wreede '409, and Kurland fail to teach the claimed first inorganic intermediate layer of independent claims 1, 15, and 16, and thus fail to cure the deficiencies of Horigome.

Therefore, no *prima facie* case of obviousness has been established with respect to independent claims 1, 15, and 16, these claims are allowable over the combination of the cited references, and claims 2-7, 9-12, 14, and 17-20 are allowable due to their corresponding dependence from claim 1 or 16. The rejections of claims 1-7, 9-12, and 14-20 over the cited references, under 35 U.S.C. § 103(a), should thus be withdrawn.

Applicants respectfully traverse the rejection of claims 1-20 on the grounds of nonstatutory obvious-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 7,031,037 ("Hirao") in view of Wreede '211 combined with Wreede '409 or Kurland.

Claims 1-11 of Hirao fails to teach or suggest at least the claimed "first inorganic intermediate layer" of claim 1, for example. The Examiner in fact does not rely upon claims 1-11 of Hirao to teach this element, but contends modifying it by "adding moisture barrier layers, such as taught by Wreede et al. '211 to prevent moisture damage and shifting of the replay." See Office Action at page 5. However, since Wreede '211, Wreede '409, and Kurland fail to teach the claimed first inorganic intermediate layer of independent claims 1, 15, and 16 as discussed above, these references fail to cure the deficiencies of Hirao.

Therefore, no *prima facie* case of obviousness has been established with respect to independent claims 1, 15, and 16, these claims are allowable over the combination of the cited references, and claims 2-7, 9-12, 14, and 17-20 are allowable due to their corresponding dependence from claim 1 or 16. The nonstatutory obvious-type double patenting rejections of claims 1-7, 9-12, and 14-20 over the cited references should thus be withdrawn.


In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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